
REQUEST FOR PROPOSALS

RFP Notice 2000

Combustion Byproducts Recycling Consortium

a program of the

National Mine Land Reclamation Center

in cooperation with the

U.S. Department of Energy

National Energy Technology Laboratory

Proposal Application Due Date: July 31, 2000

Combustion Byproducts Recycling Consortium (CBRC)
Request for Proposals (RFP) 2000

Background

Each year, over 100 million tons of solid byproducts are produced by coal-burning electric utilities in the United States in response to regulatory restrictions on emissions of air pollutants. For example, annual production of flue gas desulfurization (FGD) byproducts continues to increase as the result of more stringent sulfur emission restrictions. In addition, stricter limits on NO_x emissions mandated by the 1990 Clean Air Act have resulted in utility burner/boiler modifications that frequently yield higher carbon concentrations in fly ash, which restricts the use of the ash as a cement replacement. If newer, "clean coal" combustion and gasification technologies are adopted, their byproducts may also present a management challenge.

The objective of the Combustion Byproducts Recycling Consortium (CBRC) is to develop and demonstrate technologies to address issues related to the recycling of byproducts associated with coal combustion processes. A goal of CBRC is that these technologies, by the year 2005, will lead to a doubling of the current rate of FGD byproduct use, a 10% increase in the overall national rate of byproduct use, and a 25% increase in the number of uses considered "allowable" under state regulations.

The CBRC is sponsored by the U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) and managed by the National Mine Land Reclamation Center (NMLRC) at West Virginia University (WVU). For more information on the CBRC program including projects, funding, or proposal application procedures and forms, please access the CBRC web site at:

<http://cbrc.nrcce.wvu.edu>

Submission of Proposals

The original proposal application and two copies must be received by **July 31, 2000** before 4:30 PM, EST by the National Center of the Combustion Byproducts Recycling Consortium located at the National Mine Land Reclamation Center at West Virginia University at the following address:

Tamara Vandivort, Consortium Manager
Attention: CBRC RFP 2000
NMLRC - WVU
Evansdale Drive; PO Box 6064
Morgantown, WV 26506-6064
Telephone (for carrier service): (304) 293-2867

Please note that misdirected proposals shall be deemed late and returned to the applicant. All proposals shall be complete at time of submission. Later changes or addendums will not be accepted. Proposals must be mailed or sent via commercial carriers. Faxed or electronic proposals will not be accepted.

Program Funding

Last year, 34 proposals were received and 18 of those proposals were funded. Awards ranged from \$18,765 to \$116,180. It is anticipated that a similar number of awards will be made this year to applicants in any of the 50 United States and its territories through this request for proposals. The sum total of funding available will not be less than \$1 million and will be awarded by the U.S. Department of Energy - National Energy Technology Laboratory. Requests for up to two years funding may be made and, if awarded, funds will be made available yearly for up to two years of funding depending upon satisfactory progress. Applicants will be notified as to whether or not their proposal has been awarded and first year funds will be made available in February, 2001. All funds awarded are intended to support activities in the region within which the applicant's project falls and may include salaries, travel, equipment, materials, and services not including fees or profit. Nevertheless, the CBRC reserves the right to accept or reject in whole or in part any and all proposals.

A minimum cost-share of 25% is required and the applicant must provide some portion of this percentage. The remainder may come from academia, industry, or other non-federal sources. The higher the percentage of cost-share received, especially if from the applicant, the more favorably the proposal will be considered. Signed letters of support indicating specific actual cash and/or in-kind services meeting the minimum 25% cost-share requirement are required as an attachment to the proposal application. Proposal applications received without signed letters of support meeting the minimum 25% cost-share requirement will not be considered. (For a definition of cost-sharing see

Federal Register 59(64) Monday, April 4, 1994, Section 19.23.)

The CBRC requests proposals for research expected to be funded February, 2001 through January, 2003. Included in this document are instructions for proposal preparation, including a list of research priorities and information on the proposal review process.

CBRC Research Program Schedule

July 31, 2000	One original proposal and two copies due to CBRC's National Center at the National Mine Land Reclamation Center located at West Virginia University
September 30, 2000	Reviews completed
October 31, 2000	Funding decisions made
November 15, 2000	Applicants notified of decision
February, 2001	Awards distributed

Reporting Requirements

Funded projects will have the following reporting requirements:

- Quarterly progress reports
- Quarterly financial reports
- Comprehensive final report
- At least one write-up for one or more CBRC newsletters

The Combustion Byproducts Recycling Consortium (CBRC) Program

The CBRC's primary goal is to develop and demonstrate technologies to address issues related to the utilization of byproducts associated with coal combustion processes. It is hoped that by the year 2005, these technologies will lead to a doubling of the current rate of FGD byproduct use, a 10% increase in the overall national rate of byproduct use, and a 25% increase in the number of uses considered "allowable" under state and federal regulations.

No byproduct utilization technology will be adopted by industry unless it is more cost-effective than landfilling. Therefore, it is extremely important that the utility industry provide guidance to the R&D program. Government agencies and private-sector organizations that may be able to utilize these materials in the conduct of their missions should also provide input. The CBRC will serve as an effective vehicle for acquiring and maintaining guidance from these diverse organizations so that the proper balance in the R&D program is achieved.

The CBRC Consortium Structure

There are three major elements of the CBRC: the National Steering Committee (NSC), regional advisors/reviewers for each of the three regions, and program management. Each element is described below:

National Steering Committee: The National Steering Committee (NSC) is the key element of the CBRC. All decisions on how the CBRC conducts business will be made by consensus of the NSC. Critical roles and responsibilities of the NSC include:

- approving overall CBRC structure and timetables,
- selecting from its membership chairpersons for the regional reviewers/advisors
- authorizing Request for Proposals (RFP's), and
- making project funding decisions.

Regional Advisors/Reviewers: The types of coals burned by electric utilities and the technologies employed for emission control greatly affect the characteristics of the byproducts that are produced. The NSC recognized that these characteristics often vary from region to region. Regional prioritization of research needs is also dictated by the cost of transportation and the state-to-state differences in regulations governing byproduct disposal and utilization. For this reason, regional advisors/reviewers have been solicited for the eastern, midwestern, and western regions of the United States.

The regional advisors/reviewers chairperson has the primary responsibility for selecting the reviewers/advisors for that region. The roles and responsibilities of the reviewers/advisors are as follows:

- identify research priorities of the region for use in the RFP,
- review, score, and rank proposals received in accordance with research priorities,
- review technical progress on projects that are funded, and
- report important results to the National Steering Committee.

Program Management: The National Mine Land Reclamation Center (NMLRC) at West Virginia University will serve as the national center for CBRC. Oversight is provided by DOE-NETL. The roles and responsibilities under the direction of the NMLRC include the following:

- soliciting members to serve on the National Steering Committee,
- scheduling, organizing, and facilitating National Steering Committee meetings,
- providing draft RFP's to the national steering committee
- developing final RFP's
- developing RFP dissemination strategies
- developing a proposal scoring/ranking system for use by proposal reviewers
- compiling the results of proposal reviews for the National Steering Committee
- awarding and administering research contracts
- assuring that contractors meet all performance, reporting, and budget requirements
- facilitating communications between the committees, DOE-NETL, research contractors, and external agencies, and
- disseminating research results via seminars, newsletters, internet, etc.

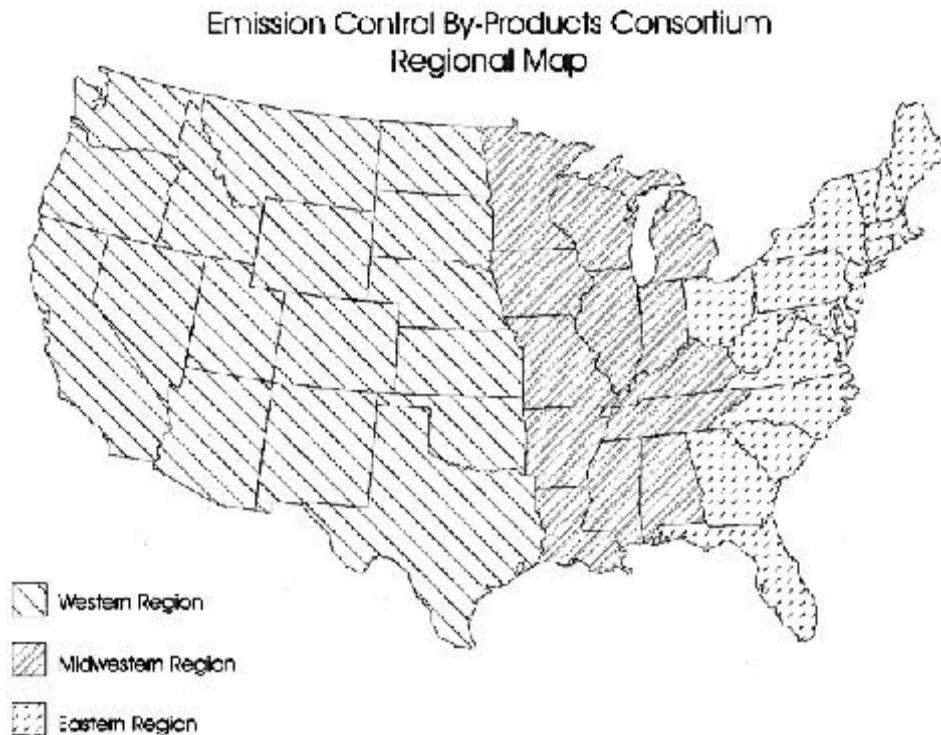
There are also three Regional Centers: The Eastern, Midwestern, and Western Regional Centers. The regional centers for the CBRC are located at a university within each region. The Eastern Regional Center is located at West Virginia University, the Midwestern at the Southern Illinois University at Carbondale, and the Western at the University of North Dakota. A director at each regional center manages the CBRC projects for their particular region, facilitates communications with the National Center Consortium Manager, Regional Chair, and regional advisors/reviewers.

Advantages of the CBRC Consortium Structure

- The public will be better served if research priorities are based on the common needs of both industry and government and issues critical to the region are addressed.
- Contracting procedures will be streamlined by having only one federal contact between DOE-NETL and the CBRC managers. The CBRC managers will be responsible for assuring that the technical and budget-reporting requirements associated with the performance of individual research contracts are as efficient and effective as possible.
- The structure of the regional advisors/reviewers will ensure that proposals will meet regional technical needs and that the research does not duplicate on-going work.
- Steering committee members and regional advisors/reviewers may be exposed to innovative research ideas that would not have been revealed via their own efforts. Even if the National Steering Committee as a whole decides not to fund a particular proposal, the individual participants may choose to work with the proposing organization using other funding sources.

CBRC Regional Categories

The fifty United States and its territories make up three specific CBRC regions. Each region has identified priorities that, if met, should increase the utilization of coal combustion byproducts (CCB's) within that region. Although many priorities are shared between regions, proposals will be evaluated separately by region in order to help that region meet its own priorities. The map below shows which states fall within these three CBRC regions.



Research Area Priorities by Region

Eastern Region Research Priorities

- E1 Address the issues to coal combustion byproducts (CCB's) quality and reuse from federally-mandated requirements to reduce nitrogen oxide (NOx) emissions including:**

ammonia carryover into ash from NOx-reduction technologies such as SCR and mSNCR, e.g.,

How will ammoniated ash behave in “standard” uses of such materials such as ready mix concrete or embankments and stabilized bases?

Can ammonia be fixated in the ash or removed from it?

What can be done with ammoniated runoff water? (Health issues, odor issues, potential for new uses of ammoniated ash such as agricultural/horticultural applications)

increased unburned carbon in ash due to loss on ignition (LOI) (economical carbon removal from ash, economical methods to beneficiate ash at high volumes, development of beneficial uses that can tolerate high carbon ashes due to LOI)

- E2 Develop unique utilization of all types of coal combustion byproduct (fly ash, bottom ash, FGD sludge, etc.) in large volume applications (or R&D of issues that prevent such use) such as:**

Civil and Structural Engineering Uses

potential of some CCB's to swell due to ettringite issues, and how to address this issue, or develop or better define standards to avoid swelling.

various uses such as structural fill for highway subbase or base course embankment; subsidence control; development of a flowable fill using FGD; feedlot, storage pads, or holding ponds, etc.

development of value-added products (or improvement on products) such as pipe composites; structures which can absorb nitrates; structures for seawall use; synthetic or “man-made” (i.e., replacement of natural raw materials with CCB's) aggregate, brick, block, wallboard, mortar, ceramics, roof tiles, etc.

Agricultural Applications

as soil amendment (with yard waste/compost),

issues of heavy metals (especially arsenic and mercury)
up-take/bio availability into plants and food chain,

development of food and feed standards/framework,

leaching of nitrates from CCB's vs. commercial fertilizers into surface
and groundwaters, and

use as a treatment for bio-solids.

Mine Land Reclamation (Both Surface and Underground)

acid mine drainage amelioration,

subsidence control, and

clean-up of gob piles and/or process gob pile wastewater runoff.

Treatment for Bio-Solids

use of CCB's at municipal wastewater treatment facilities.

E3 Development of standards and their incorporation into state and federal environmental and transportation specifications, such as:

surface and groundwater concerns, leaching;

long-term performance of CCB's and later-term impacts (if any) to the
environment;

secondary disposal issues (landfill or not-liability issues);

improved test methods for setting standards; and

post secondary use/disposal and liability issues.

E4 Development of value-added products from CCB's, including:

high-tech applications in auto and/or aerospace industry, and
materials research.

Midwestern Region Research Priorities

- M1 Beneficial large-volume applications of conventional CCB's and FGD byproducts (wet/dry scrubber byproducts, fluidized-bed combustion residues) in construction, building products, roads, agriculture, etc.**
- M2 Beneficial large-volume use applications for CCB's with high unburned carbon and/or contaminated with ammonia.**
- M3 Impacts of changing air quality standards on CCB's and FGD byproducts.**
- M4 Technical, environmental, and economic assessment tools for management of CCB's and FGD byproducts.**
- M5 Efficient handling and transportation of CCB's and FGD byproducts, including dust control.**

Western Region Research Priorities

- W1 Develop information or processes to promote the increased use of CCB's to state regulators and government agencies in applications such as mine land reclamation, structural fills, and other more nontraditional uses.** This might be education of regulators by sharing information or jointly developing solutions that might include the use of CCB's. This could also be by promoting performance specifications for all applications of CCB's, without regard to ash type or application (such as working with state and federal agencies, ASTM, DOT's, PAWA, ACI to develop performance specifications rather than classify use by ash type).

- W2 Research the use of ash blends and potential applications of blended ashes.** (Commingled coal types create unique and challenging ashes for sales or reuse.)
- W3 Develop markets and uses for FGD fly ash.** (Specifically aimed at dry systems, not slurry systems.)
- W4 Develop information on or demonstrate uses of CCB's in mine land reclamation that address issues of air and water quality and the reduction of landfill space by such use.**
- W5 Develop methods or technologies for making use of high-carbon fly ash.**
This might include research into the use of high-carbon ash without separation or carbon removal, and/or develop methods and technologies to economically remove carbon and/or other impurities from fly ash (other than technologies that already exist).
- W6 Develop methods or technologies for increased use of bottom ash.**
Examples of this might be the development of methods or technologies to efficiently and economically dewater ponded ash so that material might be marketed, or develop land remediation uses for bottom ash (this could include agricultural, landscape, or reclamation activities).

CBRC Proposal Application Checklist

The Combustion Byproducts Recycling Consortium has developed a proposal application format which should be followed in preparing your application. Face page and budget forms are attached and can also be downloaded from the CBRC web site: <http://cbrc.nrcce.wvu.edu>. Please include the following sections in your proposal applications in the order in which they are listed. Items 1 through 7 must not exceed a total of 30 pages. Use 12 pitch type and 1 inch margins.

- 1) Face Page (form number FP-1, attached)
- 2) Table of Contents
- 3) Project Abstract (limit to one page single-spaced)
 - a) Include Preferred Area of Research (see attached listing) centered and 2 lines beneath the abstract.
- 4) Project Description (15-20 pages)
 - a) Objectives
 - b) Background
 - c) Preliminary Studies (if applicable)
 - d) Experimental Procedures/Methodologies
 - e) Significance of the project to the Combustion Byproducts Recycling Consortium and to the U.S. DOE-NETL
 - f) Description of resources (i.e., laboratory facilities)
 - g) Literature Cited
- 5) Statement of Work (3-5 pages)
 - a) Issue Identification
 - b) Work Tasks
 - c) Time Allocation
 - d) Resource Allocation
 - e) Quality Assurance/Quality Control
 - f) Determination of Goals
- 6) Budget for each year of the project for which funding is requested (form number B-1, attached)
- 7) Explanation of Budget(s)
- 8) Identification of Proprietary Information (if applicable)
- 9) Signed Letters of Support meeting minimum 25% cost-sharing requirement
- 10) Resumes of each senior investigator

The original proposal application and two copies must be received by the CBRC National Center located at the National Mine Land Reclamation Center at West Virginia University on or before 4:30 PM EST on the due date of **July 31, 2000.**

Instructions for Preparing the CBRC Proposal Application

Please include the following sections in your proposal application in the order in which they are listed. Note that items 1) through 7) must not exceed a total of 30 pages. Use 12 pitch type and 1 inch margins.

- 1) Face Page (form number FP-1, attached): All sections on this form must be completed and signatures of appropriate officials are required.
- 2) Table of Contents: Please include major sections and the corresponding page numbers.
- 3) Project Abstract: The abstract should be limited to one page, single-spaced, and be followed by the preferred area of research (see attached listing). The preferred area of research should be spaced 2 lines below the abstract and centered.
- 4) Project Description:
 - a) Objectives - List the specific objectives of the project.
 - b) Background - Provide a comprehensive description of the relevance of the project.
 - c) Preliminary Studies (if applicable) - Describe any precursory research that applies to the project topic and what was determined from those preliminary results.
 - d) Experimental Procedures/Methodologies - Describe any laboratory or field testing to be performed referencing analytical methods used.
 - e) Significance of the project to the Combustion Byproducts Recycling Consortium and to the US DOE-NETL - Give a description of the need for this project, its technical merits, and how the project will be of significance to the research priorities outlined for the eastern, midwestern, or western regions. (A description of regional research priorities is included in this RFP.) Include a discussion of the technology transfer potential of the project and how it will be accomplished. Also, the extent of involvement in the project by the ultimate end users of the technology should be described. Note if any cost-sharing in the project is by end users of the technology and the potential for other end users to adopt project results.
 - f) Description of resources - Describe the laboratory facilities, testing equipment, field sites, etc. available for conducting the tasks associated with this project.
 - g) Literature Cited - List all sources used.

5) Statement of Work

- a) Issue Identification - Identify and briefly describe the issue this project is addressing.
- b) Work Tasks - Break the project into specific work tasks and describe each work task individually.
- c) Time Allocation - Describe how much time (by months) is to be allotted for each work task and when each task is to begin and end.
- d) Resource Allocation - For each work task, list the personnel who will be working on that task and specifically what each person will be doing.
- e) Quality Assurance/Quality Control - List measures planned to ensure that high quality results are achieved such as descriptions of statistics to be used to evaluate data and to compare data to controls.
- f) Determination of Goals - Identify the means to be used to determine that project goals are met.

6) Budget(s): Complete form B-1 for each year of the project for which funding is requested for a maximum of 2 years. A copy of this form is attached and may be used to make multiple copies as needed, or this form can be downloaded from the CBRC web site: <http://CBRC.nrcce.wvu.edu>.

7) Explanation of Budget(s): It is imperative that any overhead, indirect costs, or benefits rates be specified as well as which budget categories are affected by those rates. (For example, Indirect Costs defined as "Facilities and Administration" = 46% of Total Direct Cost less tuition and equipment.) In addition, salaries must include personnel descriptions (i.e. faculty, graduate student, hourly worker, etc.), the number of hours expended on the project, and the hourly rate. Actual salaries are to be used for the first year with an increase of up to 3% for the second year. Supplies must be listed in general terms (i.e. field supplies, general office supplies, etc.). Travel must include a description (trips to field site, conference, etc.), estimated number of hours for travel and estimated cost per trip. In addition, for travel to conferences, estimate proposed expenses in the budget. For travel to conferences, specific information on conference title, dates of conference, and purpose in attending (i.e. presenting paper, poster session, etc. must be supplied to the CBRC for approval prior to travel. Other Direct Costs must include a general description (i.e., chemical analysis) and include units and unit cost. Indirect Costs must include a breakdown of indirect cost rates and a brief description such as "proposer's rate" or "facilities and administration." Finally, the sources must be differentiated between in terms of total amounts and percentages requested from 1) CBRC, 2) applicant, and 3) other (industry, etc.). In-kind contributions provided by industry, government agencies, and university department should be included.

Allowable Costs - Subcontractor and In-Kind Participants

Note: Allowable costs for federal agreements are determined by the type of recipient organization. All subcontractor or in-kind participant costs must be allowable under federal guidelines in order to be paid with federal funds or used as cost share. Allowable costs include both direct and indirect costs. Commercial organizations are governed by the Federal Acquisition Regulations part 31.2 (Contracts with commercial organizations). FAR part 42.7 (Indirect Cost Rates) prescribes policies and procedures for establishing Indirect Cost Rates.

Actual salaries must be used allowing for reasonable escalation the second year. Fringe benefits must be based on actual cost (an average percentage rate may be used for estimating purposes) or an approved rate. Fringe benefits, indirect costs, G&A, overheads, and other rates must be federally approved. In the absence of an actual federal approval (DCAA, HHS or other federal agency) documentation that these rates were previously accepted by a federal agency should be submitted. The name of the agency, address, contact person, and federal agreement number where the rates were accepted should be provided. Copies of any correspondence accepting the purposed rates should be provided.

Cost sharing or matching requirements are governed by the Office of Budget and Management Circular A-110, Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organizations, Section 23. This Section also gives guidelines on valuation of equipment and other tangible contributions when proposed to be used as an in-kind contribution.

8) Identification of Proprietary Information: Technical data or other data such as trade secrets, confidential financial or commercial information, or other privileged information which the applicant prefers not be publicly disclosed or used by CBRC for any purpose except for proposal evaluation may be included in this application. To protect any confidential data, each page must be specifically identified indicating each paragraph or line that contains confidential data the applicant wishes to protect. Applicant shall also include a page following the budget(s) which states the following:

TRADE SECRET INFORMATION

In order to explain properly the proposed work, it may be necessary to disclose within the proposal document trade secret information. If such is disclosed, the CBRC wishes to take steps to keep such information confidential. However, it must be aware that such information does or does not exist within a given proposal. Therefore, please complete the following:

_____ There is NO trade secret information contained in this proposal package.

_____ There IS trade secret information contained in this proposal package.

Such information is noted on pages _____.

NOTE: Please REDACT those pages which contain trade secret information. In other words, conspicuously highlight or mark those passages, diagrams, drawings, etc. that contain trade secret information.

Also note that the Project Abstract may be released to the public. Therefore, the abstract must not contain any trade secret information.

9) Signed Letters of Support meeting minimum 25% cost-share requirement: Signed letter(s) of support from all cost-share supporters for actual cash contributions or for in-kind services provided during the period of time for which the project is to be funded are required with the proposal application. Proposal applications received without signed cost-share support letters meeting the minimum 25% requirement will not be considered. Letters arriving under separate cover (before or after the proposal due date) or faxed letters of support will not be accepted. Letters of support must include the type of contribution to be provided (cash contribution or in-kind service), the dollar amount committed, and/or the estimated dollar value of the service. Letters of support must be on letterhead and signed by a duly authorized individual. Note that cost-share commitments are contingent upon selection and funding of the submitted proposal.

10) Resumes of each senior investigator: Please limit resumes to 1 page for each senior investigator involved in the proposed project. Note that senior investigators include the principal investigator and any other faculty or senior-level personnel involved in the project.

Combustion Byproducts Recycling Consortium
RFP 2000 Face Page
Form FP-1

Project Title: _____

Project Duration (in months; 24 month maximum): _____ months

Has this proposal been submitted elsewhere? Yes _____ No _____

Principal Investigator

Name and Title: _____

Organization: _____

Mailing Address: _____

Telephone: _____ Fax: _____

E-mail: _____ Federal Tax ID Number: _____

Funding

Funds requested from CBRC: _____ New Application _____

Funds provided by proposer: _____ Continuation _____

Additional matching funds: _____

Total Project Cost: _____

Proposer's Organization

Name: _____

Address: _____

Certifying Representative's Name and Title:

Certifying Representative's Telephone Number: _____

_____/_____
Signature of Principal Investigator/Date

PI Assurance: I agree to accept responsibility for the scientific conduct of the project, to provide the required reports, to acknowledge CBRC in any presentations and publications wherein the results of this project are used, and to provide copies of presentation abstracts and publications to CBRC provided an award is made as a result of this submission. I also agree to allow this proposal to be reviewed by industry and/or academia and that proprietary information which has been properly identified will be used solely for proposal evaluation.

_____/_____
Signature of Organization's Date
Certifying Representative

Certification & Acceptance: I certify that to the best of my knowledge, the statements contained herein are complete and true and I accept the obligation to comply with CBRC terms and conditions provided an award is made as a result of this submission.

Combustion Byproducts Recycling Consortium Budget Page RFP 2000 Form B-1							
Project Title:					Budget Page:		
Principal Investigator:					Requested Duration: ____ months		
Organization:							
				Source			
Item	Hours	Rate	Total	CBRC	Applicant	Other	Total
1. Salaries (list each person or position separately)							
2. Benefits (list benefits rate per person)							
3. Tuition							
4. Supplies							
5. Equipment							
6. Subcontracts							
7. Travel							
8. Other Direct Costs							
9. Total Direct Costs							
10. Indirect Costs (list applicant organization's rate and line item to which it applies)							
11. Total							
12. Cost Share Percentages							100%